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NPIC/P&DS/D/6-1393
31 May 1966

MEMORANDUM FOR THE RECORD

SUBJECT: Trip [redacted] on 16-17 May [redacted] in Connection with Contract [redacted]

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1. The primary purpose of the visit to [redacted] was to investigate the initial work of the prototype Briefing Print Enlarger (BPE) project now under way. The report of the results of the trip deal primarily with this project; however, other projects under [redacted] will also be covered.

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25X1 2. The first hour at [redacted] was spent reviewing the revised proposal and specifications of the BPE, PAR 243 "Briefing Print Enlarger Prototype." This was followed by a five hour session going over details involved with the fabrication of the BPE; this session carried over until the next day when drawings of component parts of the BPE were examined and discussed. Other items were covered as outlined in this memorandum.

3. BPE (PAR 243).

a. The first question raised by NPIC concerned the estimated cost of the prototype BPE. The original estimate of costs made in 1965 was 25X1 [redacted] (not counting the six-lens system which was to come from the breadboard model, already paid for). The latest estimate is [redacted] an 25X1
25X1 increase of [redacted] The increased cost was largely due to changes which came about after tests were made on the breadboard model and after talks between representatives of NPIC and [redacted] had taken place in 1965 and 1966 25X1 leading to improvement recommendations. The increase in cost covers: (1) the design changes, (2) increased rates since 1965, (3) the decision to maintain the breadboard in operational condition as a test bed for additional prototype models, thus salvagable parts will not be used in the NPIC prototype, (4) addition of polycontrast filters to the lamphouse, (5) removable cooling system for the lamphouse, (6) removable filters for the filter wheel in the lamphouse, (7) new concept of interface between the fluid gate and the lamphouse, (8) improved mounting method for the lens and focus assemblies, (9) interlock systems to protect the negative transport, (10) revised magnification focus table drum design for the computer read-out chart, (11) revised console, (12) manufacturing drawings, (13) parts lists, and other improvements covered below in more detail.

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b. Discussions and Questions covered the following items in the first session:

(1) Of the six lenses, five were suitable for exposing color as well as black and white. The sixth lens (40x to 60x) is designed only for black and white. An additional lens (1.25" f/4) can be made in the future if the requirements for color for the high manification ranges comes into existence.

(2) A newly designed drum is planned for the magnification focus table to allow for two or more columns of figures for the 60x to 160x lens system when it is ready, (PAR 245).

(3) There had been considerable difficulty in reading several scales on the BPE; new designing has made it possible to read the coordinates of the negative transport and the lens settings on the lens mount. The coordinate indicators are being redesigned to a servo-type and will be located just above the film viewing window. The numerals for the lens settings are being made more legible by changing from o.125 inch-high numerals to 0.170 inches and the next lens mount will make the focus indicator window more accessible. The lens mount will also include a vernier type scale for correcting focus when emulsion side is reversed and for color film.

(4) The speed of the vertical drive of the negative transport had been very slow on the BPE breadboard model. Improvements now call for quick movement of the negative from the search or viewing position to the gate position. However, the movement from the fluid gate to the viewing position must allow time for the film to dry, therefore, this movement will still be slow, but with a built-in limiter with controllable variable speed.

(5) The toxic fumes from the fluid of the liquid gate will be forced downward into an exhaust pipe.

(6) Spare parts will be handled later on a basis of providing a list for each machine. The first list (Interim) will be due about four months before installation of equipment, revised lists may follow at a later time.

(7) A schedule of the fabrication of component parts is to be worked out and followed [redacted] however, this schedule should have some flexibility when considering the timing of the drawings, castings for various units of the component parts, and sub-assemblies. NPIC will be notified immediately of the scheduled events and should be prepared to visit [redacted] within a day or two after the call, otherwise a delay in the time schedule of the project may result. Fabrication of

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the seven additional models will conform to the schedule of the NPIC prototype. Visits by other monitors (Navy, AF, DIA) will occur only by invitation from NPIC representatives.

(8) Paragraph 3.1 of spec. no. 469-333 provides for a possible error of ± 1% magnification from that shown on the magnification-focus drum. This is an error in lens fabrication and will vary from lens to lens. The problem of this slight deviation of image size in the print was discussed; requirements for the product of the BPE will not be exacting and the print will usually not be affected by this error since exact measurement will not be taken from high magnification prints. To make tolerance tighter would cost more in time and money. If necessary, this error could be corrected by the operator by calibrating the conjugate distance after taking delivery of the machine.

(9) The specifications call for several readings such as temperature levels, density, and percentages, as noted in the proposal itself. NPIC representatives received satisfactory verbal answers, but 25X1 [redacted] requested that they be allowed to make more tests before they commit to a firm figure.

(10) Installation of the equipment calls for certain information from the customer; 25X1 [redacted] has some basic information available as to size of equipment and power requirements; however, blower information is lacking such as, method of soundproofing, method of mounting, exhaust, diffusion, etc. The blower will be designed to work with room circulation systems in the room where the machine is installed. Under this condition it will probably cause an added 2 KW of energy to the room. The blower should be located close to the machine and should utilize a rigid pipe assembly for best efficiency; the motor will be 2 1/2 HP or better and probably operate on a 3 phase AC. The current may be around 10 amps; however, this could be adjusted to customer facility currents. Installation charges are included in the price of the machine, but shipment charges are not.

(11) Drawings and layouts of the prototype BPE are well underway (covered in paragraph 3c below).

(12) Castings of certain parts will be made soon.

(13) The massive frame of the BPE will be ordered after location for the various component parts are decided upon. The construction fabrication of other component parts; [redacted] sees no problem in timely delivery of the frame for assembly. 25X1

c. Details and review of the drawings of component parts covered the following items in the second session on the BPE:

(1) The computer program for obtaining the focal calibration of the lenses has been completed. The run-off sheet or a similar recording will be mounted on the drum to be read by the operator.

25X1 (2) [redacted] will provide testing patterns for the customer with each machine. The resolution target will be a medium contrast 100:1 USAF type providing 80 to 800 lines per millimeter. The criteria for judging image resolution will be that of Paragraph 3.6.2 of ASA MIL STD 150 A.

(3) A new method to effectively display the negative coordinate measurements on the film transport will be utilized, it will probably be electronically operated with large lighted characters for easy reading. The film transport itself will contain an interlock to protect the film while in the gate, the release will be located in the control handle. Casting of the frame for the transport component will be accomplished very soon.

(4) Drawings of the revised locking system for the lens mountings appeared to be satisfactory, although more expensive. The new system of using lens-bench type rails and a locking device is far better than the "breadboard" system of using thumb screws. The drawings of the display of the figures in the focus indicator on the focus assembly reflect a change which is much better than that on the "breadboard" lens assemblies.

(5) The lamphouse assembly drawings show a great many improvements over the "breadboard" design; the mountings and the cooling and exhaust systems have changed; warning lights will be used to warn to lock lenses and to focus the condenser. The lamphouse no longer pivots to close the gate. The filter wheel is a new design and will be positioned automatically when the condenser assembly is inserted.

(6) The magnification-focus table drum has been redesigned to add two windows to provide for the reading of the chart for the new lenses 60x to 160x when they are completed in the future. The drum base is now ready to be cast.

25X1 d. [redacted] presently has seven men assigned to the NPIC prototype development project.

4. 12 Inch Roller Transport (PAR 214).

A sign-off of this project will be made by NPIC. The funds have been exhausted and the schedule of a number of repairs and changes has been completed. The machine is now operational in PSD.

5. 24 Inch Paper Processor (PAR 215).

A sign-off of this project will be made by NPIC soon, although this project is not in a complete form. NPIC will contract for a lead tab apparatus for the machine with a local company to complete this project. [redacted] will make an offer for the drum dryer attachment; however, they are not enthusiastically inclined to offer much of a rebate; it looks like we are stuck with it.

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6. Zoom Projection Lens (PAR 233).

This project is in a stop-work status until NPIC redefines the requirements. Several NPIC projects exist which may provide the basic information needed to continue with the zoom lens [redacted]

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7. Color Demonstration Materials (PAR 242).

Reported separately.

8. BPE Lens Set 6x to 160x (PAR 245).

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[redacted] has proposed to manufacture this additional assembly; NPIC should now accept or reject the proposal. It is recommended that the proposal be accepted.

[redacted]

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Development Branch, P&DS

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